SELECTED BIBLIOGRAPHY

Arkansas DPCE. 1988. Regulation No. 2, As Amended. Regulation Establishing Water Quality Standards for Surface Waters of the State of Arkansas. Little Rock, AR.

Courtemanch, D. L. and S. P. Davies. 1987. A Coefficient of Community Loss to Assess Detrimental Change in Aquatic Communities. Water Research. 21:217-222.

Cummins, K. W., and M. A. Wilzbach. 1985. Field Procedures For Analysis of Functional Feeding Groups of Stream Macro-invertebrates. Appalachian Environmental Laboratory. Contribution 1611. Frostburg, MD.

Gammon, J. R. 1980. The Use of Community Parameters Derived from Electrofishing Catches of River Fish as Indicators of Environmental Quality. pp 335-363 in Seminar on water quality management tradeoffs. U.S. Environmental Protection Agency. EPA-905/9-80/009. Washington, DC.

Hellawell, J. M. 1978. Biological surveillance of rivers. Water Research Centre. Stevenage, England.

Hughes, R. M. and D. P. Larsen. 1988. Ecoregions: An Approach to Surface Water Protection. Journal of the Water Pollution Control Federation. 60:486-493.

Hughes, R. M., D. P. Larsen and J. M. Omernik. 1986. Regional Reference Sites: a Method For Assessing Stream Potentials. Environmental Management 10:629-635.

Judy, R. D., P. N. Seeley, T. M. Murray, S. C. Svirsky, M. R. Whitworth, and L. S. Schinger. 1984. 1982 National Fisheries Survey. Vol. 1. Technical Report Initial Findings. U.S. Fish and Wildlife Service. FWS/OBS-84/06. Washington, DC.

Karr, J. R. 1981. Assessment of Biotic Integrity Using Fish Communities. Fisheries 6(6):21-27.

Karr, J. R., K. D. Fausch, P. L. Angermeier, P. R. Yant and I. J. Schlosser. 1986. Assessing Biological Integrity in Running Waters: A Method and Its Rationale. Special Publication 5. Illinois Natural History Survey. Champaign, IL.

Nebraska DEC. 1987. A Summary of NDEC's Stream Inventory and Classification Process. Lincoln, NE.

Ohio EPA. 1987a. Biological Criteria for the Protection of Aquatic Life: Vol 1. The Role of Biological Data in Water Quality Assessment. Division of Water Quality Monitoring and Assessment. Columbus, OH.

--------. 1987b. Biological Criteria for the Protection of Aquatic Life: Vol. 2. Users' Manual for Biological Field Assessment of Ohio Surface Waters. Division of Water Quality Monitoring and Assessment. Columbus, OH.

Omernik, J. M. 1987. Ecoregions of the conterminous United States. (Map Supplement). Annals of the Association of American Geographers. 77(1):118-125.

Plafkin, J. L., M. T. Barbour, K. D. Porter, S. K. Gross, and R. M. Hughes. In Press. Rapid Bioassessment Protocols for Use in Streams and Rivers: Benthic Macroinvertebrates and Fish. U.S. Environmental Protection Agency. Monitoring and Data Support Division. Washington, DC.

Robertson, P. G. 1988. A Critique of and Proposal for Modifying Maryland's Surface Water Monitoring Program. Maryland Department of the Environment. Baltimore, MD.

U.S. Environmental Protection Agency. 1987. Surface Water Monitoring: A Framework For Change. Washington, DC.

U.S. General Accounting Office. 1986. The Nation's Water: Key Unanswered Questions About The Quality of Rivers and Streams. U.S. GAO Progress, Evaluations and Methods Division. Washington DC. GAO/PEMD-86-6.

Appendix A: The Region V Statement sent as a letter to all six State Water Program Managers (example letter to Ohio).

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REPLY TO THE ATTENTION OF:

26 MAY 1988

5WQS-TUB-8

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Re: Region V Statement Regarding the Use of Instream Biosurvey Data in Implementing the Objectives, Goals and Policies of the Clean Water Act

Dear Dr. Shank:

The purpose of this letter is to reinforce Sections 308(c) and (d) of the 1987 Clean Water Act (CWA) amendments by encouraging Region V States to gather and use instream biological survey data, where possible, when implementing pollution control requirements mandated by the Act. In the past, the emphasis of both Federal and State regulatory programs has been on the control of point source discharges of pollutants to surface waters through the National Pollutant Discharge Elimination System (NPDES) permit. The 1987 amendments reaffirm our past efforts, but also broaden the focus of our respective agencies by requiring additional efforts in a number of areas. These areas of increased emphasis include nonpoint source concerns (e.g., Section 319 of the CWA), identification and control of toxic substance influences (e.g., Sections 304 and 305 of the CWA), follow-up studies to examine benefits of pollution control efforts, and other initiatives. As efforts to control surface water pollution diversify and as our understanding of the complexity of the problems increases (particularly in the toxic substance control area), it is important that the regulatory agencies fully utilize and integrate available assessment and control methods (i.e., biological, chemical and treatment technology) to ensure the goals of the CWA are achieved. This integration appears critical to developing and implementing the most efficient and appropriate monitoring and control programs given limited resources.

On August 25, 1987, Region V distributed guidance on implementing whole effluent toxicity controls in NPDES permits. This guidance was consistent with the U.S. Environmental Protection Agency's (U.S. EPA) 1984 National

policy for the development of water quality-based permit limitations for toxic pollutants (FR 49 [48]: 9016-9019, March 9, 1984). To further encourage the Region V States to adopt and implement the truly integrated approach to pollution control referenced in the National policy statement, Region V (through the Environmental Sciences Division and Regional Instream Biological Criteria Committee) will work with each State agency to update the State water monitoring strategy. The purpose of this effort should be to ensure the appropriate biosurvey, toxicity testing, and chemical-specific analytical capabilities are incorporated into ongoing programs. Encouraging the expanded and integrated use of biosurvey information is clearly consistent with National policy and objectives.

The biomonitoring capabilities (both biosurvey and toxicity testing expertise) of all of the Region V States are recognized. In addition, expanded use of instream assessments and efforts to develop and implement biocriteria are apparent in selected States both within and outside Region V. These activities are encouraged where appropriate and the information should be used in the appropriate manner to effectively influence regulatory decisions and actions. Instream assessments can also be utilized to document environmental improvements resulting from these actions. The Region V Instream Biological Criteria Committee can provide technical assistance, and review biocriteria or other proposals.

It is clear that toxicity testing and toxicity controls are playing an important role in complementing traditional chemical-specific controls on toxic substances. In addition to these tools, biosurvey information can complement ongoing monitoring activities and play an important role in such areas as:

(1) determining if the aquatic life use designation is being attained;

(2) indicating whether additional point or non-point source abatements are needed;

(3) verifying the effectiveness of pollution abatement programs;

(4) indicating the general level of treatment necessary to attain, or maintain, the desired use designation by comparison with pollutant loadings from similar receiving waters with demonstrated healthy aquatic communities;

(5) satisfying water program reporting requirements under Clean Water Act Sections 304(1), 305(b), 314 and 319 and

(6) educating the public about water quality assessment and management.

Along with the expanded use and integration of biosurvey information into the variety of surface water programs, integration into the NPDES program is critical. Because the focus on controlling discharges of toxic substances from point sources must be intensified to ensure compliance with Section 304(1) and other objectives of the CWA, it is important to utilize all available tools to satisfy these CWA requirements. With particular regard

to the role of biosurvey information in the development of toxic substance controls and individual strategies, U.S. EPA guidance recommends the use of biosurvey results, where appropriate, in the water quality standards and wasteload allocation programs. This information should be used to complement effluent toxicity information when developing water quality-based effluent limitations for NPDES permits. The integration of chemical and biological assessment methods will provide better protection of receiving water quality by lending considerable insight into the source, character, or magnitude of potential environmental impacts and by helping State agencies focus resources and prioritize additional abatement efforts.

In cases where there appear to be significant differences in the estimates of receiving water quality based on the different assessment methods (i.e., biosurvey, toxicity testing and chemical-specific analyses), Region V recommends use of a "weight of evidence" evaluation which utilizes the relative strengths of all of the assessment tools. Integration of biosurvey information into the NPDES program as opposed to other water programs may be a more sensitive process because the NPDES program is relatively well established with a number of specific procedures and policies. Also, biosurvey information and inferences are generally not as directly applicable (as toxicity or chemical-specific measures) to the formulation of permit limitations. Therefore, the following specific recommendations are intended to address the effective integration of biosurvey information into State programs specifically from the NPDES permitting perspective:

(1) The States should be encouraged to use instream biosurveys as an additional monitoring tool for environmental problem discovery.

(2) In general, site-specific biosurvey data should be considered the most direct measure of designated aquatic life use attainment. However, when chemical-specific, bioassay, and biosurvey methods yield contradictory indications, none of the three types of methods should be assumed, a priori, to be superior to the others; rather the quality of data and analysis utilized in each of the three approaches will determine the appropriate course of action.

(3) An integrated approach should be taken to the development of NPDES permit limitations, using bioassay, biosurvey and chemical-specific information at a level of complexity dictated by site-specific concerns. The necessity of any particular piece of information should be evaluated on a case-by-case basis.

(4) Although many chronic and acute population effects are revealed, it should be recognized that biosurvey information may not address potential wildlife or human health concerns, allocations necessary to prevent the cumulative impacts of long-term low-level discharges to lakes, or potential accumulation of pollutants to deleterious levels in sediment or tissue.

(5) Discussion of the use of instream biosurvey data in the water programs should be included in an update of the Regional Water Monitoring Strategy and respective State strategies.

(6) Personnel performing biomonitoring (biosurvey and bioassay) evaluations should be an integral part of the formulation and approval of water quality-based permitting requirements in State and Regional programs.

Although relatively concise, these recommendations are intended to address a number of critical aspects with respect to integration of biosurvey information into ongoing State programs. "Institutionalization" of biosurvey information into State programs is deemed necessary to maximize the effectiveness of State monitoring, wasteload allocation and control efforts.

As a final note, the recent National Biocriteria Workshop recommended that U.S. EPA assemble a Technical Support Document for the development and implementation of biocriteria. This document is expected to present more detailed methods and technical material regarding development of biocriteria and instream assessment programs consistent with this statement. Also, copies of the National Biocriteria Workshop Report will be sent to your office within the next few weeks. If you have any questions regarding the application of biosurvey data or biocriteria, please contact the Regional Water Quality Standards Coordinator, James Luey, at 312-886-0132, or the Instream Biological Criteria Committee Chairperson, Wayne Davis, at 312-886-6233.

Sincerely yours,

for Charles H. Sutfin
Director, Water Division

&

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